an impurity region provided in said semiconductor substrate extending from the lower end of said connection hole to said isolation region.

Claim 3, line 3, change "connected" to --connect--.

REMARKS

The title of invention is changed to --SEMICONDUCTOR MEMORY DEVICE HAVING INTERCONNECTION STRUCTURE--, deemed to be more aptly descriptive of the invention to which the claims are directed, as required by the Examiner.

Pages 2 and 3 of the written description are corrected to address the objections noted by the Examiner in paragraph 3 of the Office Action. No new matter is added.

Claims 1-4 stand rejected under 35 USC 112, second paragraph, on the basis of indefiniteness. In response, claim 1 is amended to provide consistency in the words "isolating" and "isolation" to describe the "element isolating region," in paragraphs 2 and 4 of the claim (and comporting with region 2 in Fig. 1) and the isolation region, described in paragraphs 3 and 7 of the claim, that comports with region 3 of the Figure. The abbreviation "HF" is clarified to represent hydrofluoric acid. Claim 3 is amended to correct a minor error in wording ("connected" now reads

--connect--). Claims 1 and 3 are amended only to address indefiniteness under 35 USC 112, second paragraph, and not to limit claim scope in view of prior art.

Claims 1-4 stand rejected under 35 USC 103(a) as being unpatentable over prior art Fig. 15 of the application in view of Kuroda USP 5,825,059. The Examiner contends that the prior art shows everything except an anti-HF side wall film on the inner wall of the contact hole, whereas Kuroda shows a silicon nitride film 20 formed on the side wall of the hole and impurity region 17, Fig. 5. The Examiner reasons that since both the prior art and Kuroda teach a contact hole formed on an impurity region, it would have been obvious to form Kuroda's silicon nitride side wall film on the contact hole wall "because it protects the interconnection layer." This reasoning is in error, and hence the rejection respectfully traversed.

In Fig. 5 of Kuroda, when the contact hole penetrates element isolating region 11, it necessarily also penetrates impurity region 17. Therefore, it is impossible to connect contact plug 22A with impurity region 17. By contrast, in accordance with the invention described by claim 1, despite that connection hole 10a penetrates element isolating region 2, the interconnection layer 13 is able to be connected with impurity region 6 through impurity region 50. It is readily apparent that the structure required by claim 1 of the present application cannot be readily attained by Kuroda.

Furthermore, the silicon nitride film 20 in the Kuroda reference is applied not to minimize enlargement of the diameter of the connection hole during hydrofluoric acid treatment per the present invention, but rather prevent short-circuiting or degradation in dielectric strength of the hole upon possible misalignment. Claim 1 is considered patentable.

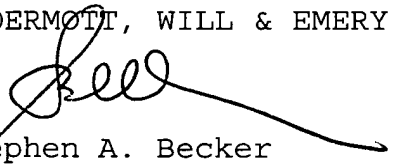
Claims 2-4 are also considered to be patentable on the basis of dependency from an allowable claim.

Favorable reconsideration of this application, as amended, is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT, WILL & EMERY



Stephen A. Becker
Registration No. 26,527

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 SAB:cms
Date: September 27, 1999
Facsimile: 202-756-8087